Transportation Seminar Series

Friday, March 7, 2008
4 - 5 p.m. in 240 Bechtel Engineering Center

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Tools for the development of large scale adaptive traffic control systems

Abstract: Current traffic controllers are programmed only to run a predefined set of control algorithms. Additionally, controllers offer limited interoperability and incremental updates are infeasible. Thus, updates require the cost of both new hardware, and porting the existing software to the new system. One would like to upgrade the controllers without worrying about interoperability, scalability, and safety issues due to faulty implementations. It would be also beneficial to enable researchers to directly implement new research ideas and algorithms on the controllers without the need of any low level programming. Unfortunately this is not possible using current systems. The tools for the development of traffic control systems (TTCS) framework is a successful attempt to address all these problems. We present a framework for the development of cross-platform adaptive control code, able to run over different controllers without any porting or hardware cost. The framework is extremely easy to use, ensures the code is able to automatically adjust to changes (e.g. introduction of new sensors, intersections or hardware failures), supports scalability, and ensures safety--preventing bugs that would put the end users (drivers and pedestrians) in dangerous situations.

Bio: B.S. and M.S. Computer Science, Ca' Foscari University, Italy; M.S. Civil Systems Engineering, University of California, Berkeley; PhD Candidate, Civil Systems, University of California, Berkeley. Zennaro's research focuses on large scale distributed control systems, including unmanned aerial-vehicle networks and urban grids of traffic controllers. He worked as a research engineer at California PATH (2000-2003) on ITS applications. At PATH he worked for the Intersection Decision Support (IDS) project--a system aimed at reducing the number and severity of crashes at intersections, and leveraging vehicle-vehicle and vehicle-intersection communication links. Recipient of the National Society of Collegiate Scholars "Lifetime membership in recognition of outstanding scholarship, leadership and service," and UC Berkeley EAP, European Union Socrates, European Union Erasmus and Regione Veneto ESU (1995, 1996 and 1997) scholarships.

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